

## **Virginia Department of Environmental Quality**

Proposed Virginia Water Protection permit

Appalachian Power Co. Smith Mountain Lake Project

Draft permit VWP 08-0572

August 2008

Appalachian Power Co.'s Smith Mountain Lake Project discharges water from Smith Mountain Lake to Leesville Lake at Smith Mountain Dam and from Leesville Lake to the Staunton River at Leesville Dam. The project also pumps back water from Leesville Lake to Smith Mountain Lake. The permit will allow the applicant to continue to operate the project to generate electricity. The public comment period ends August 22, 2008.

The Commonwealth uses the Virginia Water Protection permit to protect wetlands, streams and instream flow from the impacts of human activities. In the case of reservoirs and their operation, the permit conditions typically limit the volume of water that can be withdrawn and set the amount of water that must be allowed to flow downstream.

The permit also constitutes the Section 401 water quality certification required by the Clean Water Act. This certification is required for any activity that must have a federal license and results in a discharge to surface water. In this case, the federal license is the Federal Energy Regulatory Commission license and the discharge is the release from the hydroelectric turbines.

Highlights of the draft permit include:

- The rules that govern the release of water from the lake permit were based on the eighth of eight computer-generated release options. It is nicknamed HL-8.
- The permit scales back downstream releases automatically in response to declining inflows and lake levels instead of the current minimum release schedule. This schedule has a constant year-round minimum release regardless of the amount of water coming into the lake.
- The releases are designed to result in a certain level of river flow at Brookneal. The draft operating rules take into account the contribution of water from streams below the dam so releases from the lake can be reduced when water flow from these streams is good.
- The draft permit results in significantly higher lake levels than would have occurred under the original license, which required a minimum release from the lake of 650 cubic feet per second. For example, the original license would have allowed the lake to fall 16 feet to 779 feet during the 2002 drought (without DEQ intervention). Under the draft permit, the lake would have fallen to 790.5 feet during the 2002 drought.
- The draft permit results in slightly higher lake levels than achieved through variances granted by DEQ since 1995. For example, under this practice, the lake level has been held above 794 feet 73 percent of the time. Given similar weather conditions, lake levels are expected to be above 794 feet 77 percent of the time under the draft permit.

- The draft permit results in lower minimum releases to the Staunton River. Since 1995, downstream releases from the lake were less than the required minimum of 650 cubic feet per second 20 percent of the time. Given similar weather conditions, downstream releases from the lake would be 400 cubic feet per second or less 20 percent of the time under the draft permit.
- Future water withdrawals from the lake cannot be authorized by this draft permit. Any future withdrawals must be authorized under separate DEQ permits issued to the entity requesting the withdrawal. The HL-8 model used to develop the operating rules in the draft permit assumed 25 million gallons per day would be needed for future water withdrawals and about half of that, 12.4 million gallons per day, would not be returned back to the lake.
- The draft permit would not become effective until the Federal Energy Regulatory Commission license becomes effective (anticipated in 2010) and would be valid for 15 years.
- The draft permit's operating rules would be reviewed five years after becoming effective to see if they worked as expected. Changes to these rules could be made at that time.

### **Triggers**

- Trigger 1 activates when there is a 20 percent chance of dropping below 790.5 feet in 16 weeks.
  - Based on historic weather conditions, it is likely to happen one year out of three.
  - In most years this would occur around July 4 when the lake is down 1.4 feet. It could be triggered earlier in a severe drought.
- Trigger 2 activates when there is a 2 percent chance of dropping below 790 feet in 10 weeks.
  - Based on historic weather conditions, it is likely to happen one year out of five.
  - In most years this would occur around the first week of August when the lake is down 2.1 feet. It could be triggered earlier in a severe drought.
- Trigger 3 activates on December 1 if Trigger 2 is still in effect.
  - Based on historic weather conditions, it is likely to happen one year out of 15.
  - This occurs only at the beginning of December if the lake is down 3 feet or more, but it could carry over into the next year in a severe drought.
  - DEQ can allow additional variances to releases while in Trigger 3 status.